



The Exciting World of

Critical Aquifer Recharge Areas

Outline...

- Why we need to protect groundwater
- The Growth Management Act and Critical Areas
- Mapping, designation, classification
- A good groundwater protection program
- Challenges – The GMA Hearings Board
- Example CARA ordinances

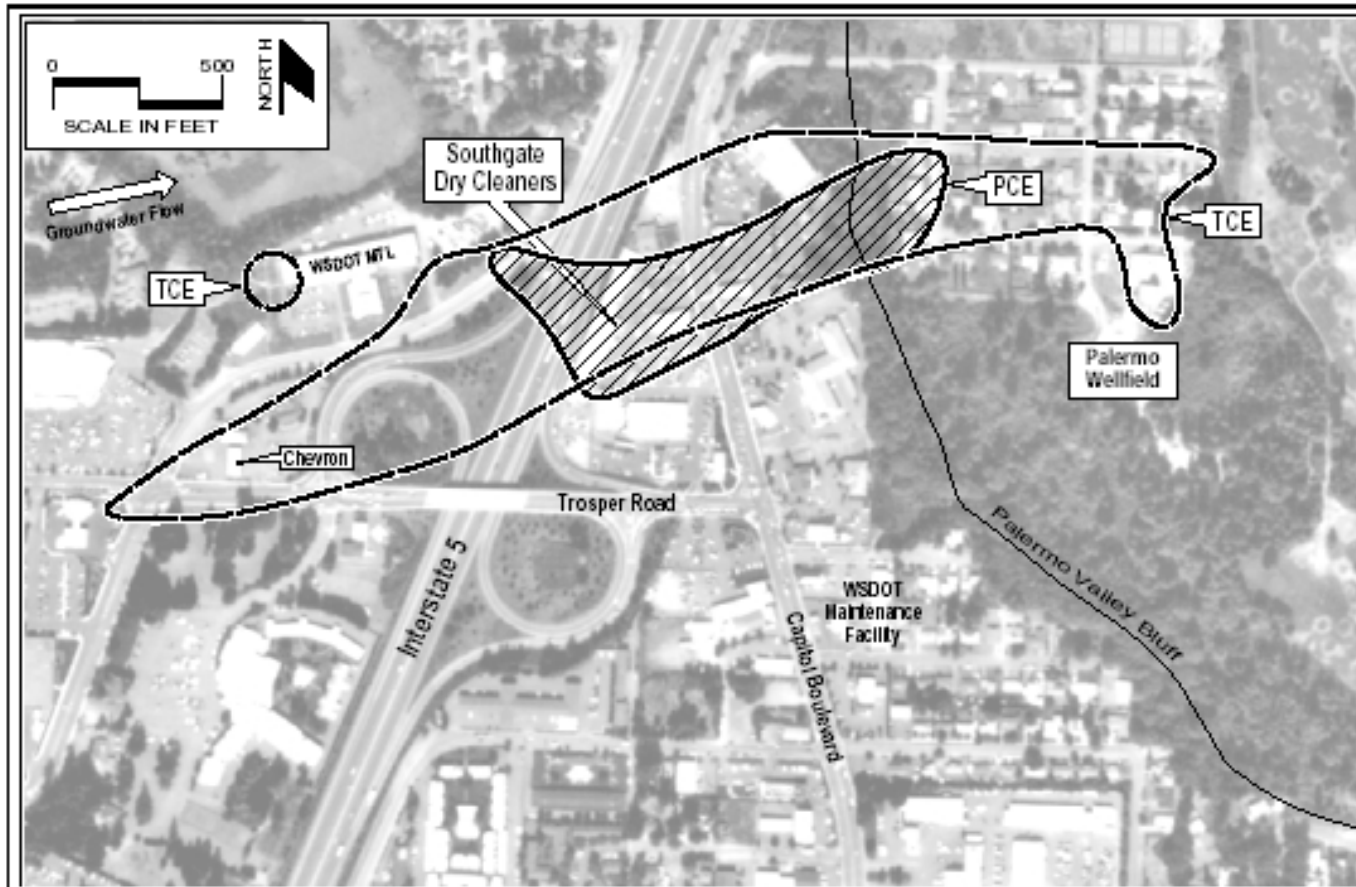
Boomsnub

“An estimated \$10 million will be spent in an attempt to save the city of Vancouver's water supply from contamination with hexavalent chrome.” - US EPA, 1995



Palermo Well Field, Tumwater

Figure 2. Approximate limits of groundwater PCE or TCE concentrations found at greater than the EPA standards used for protecting public health



Palermo Well Field, Tumwater

- TCE, PCE contaminated city wells
- Three wells closed, two replacement wells installed elsewhere
- Cost \$3.9 million dollars
- Cleanup took more than six years
- Three of six city wells were closed for five years

Alexander Farms, Benton County

- 1998 - yellow water in two local wells
- More than 12,000 tons of Dinoseb-contaminated soils excavated
- Costs to owners for cleanup said to top \$1 million (Tri-city Herald, 4/26/2002).

Growth Management

GMA Planning Goals (RCW 36.70A.020)

- Planning for urban growth
- Reducing sprawl
- Transportation
- Housing
- Economic development
- Property rights
- Permits

Growth Management

- Natural resource-based industries, timber, agricultural, and fisheries
- Open space and recreation.
- Environment
- Citizen participation
- Public facilities and services
- Historic preservation

Growth Management

Critical Areas

- Wetlands
- Frequently Flooded Areas
- Fish Habitat
- Geologically Hazardous Areas
- Critical Aquifer Recharge Areas

Land Use Planning

- Comprehensive Planning
- Public Process
- Ordinances
- Development Permits
- Appeals

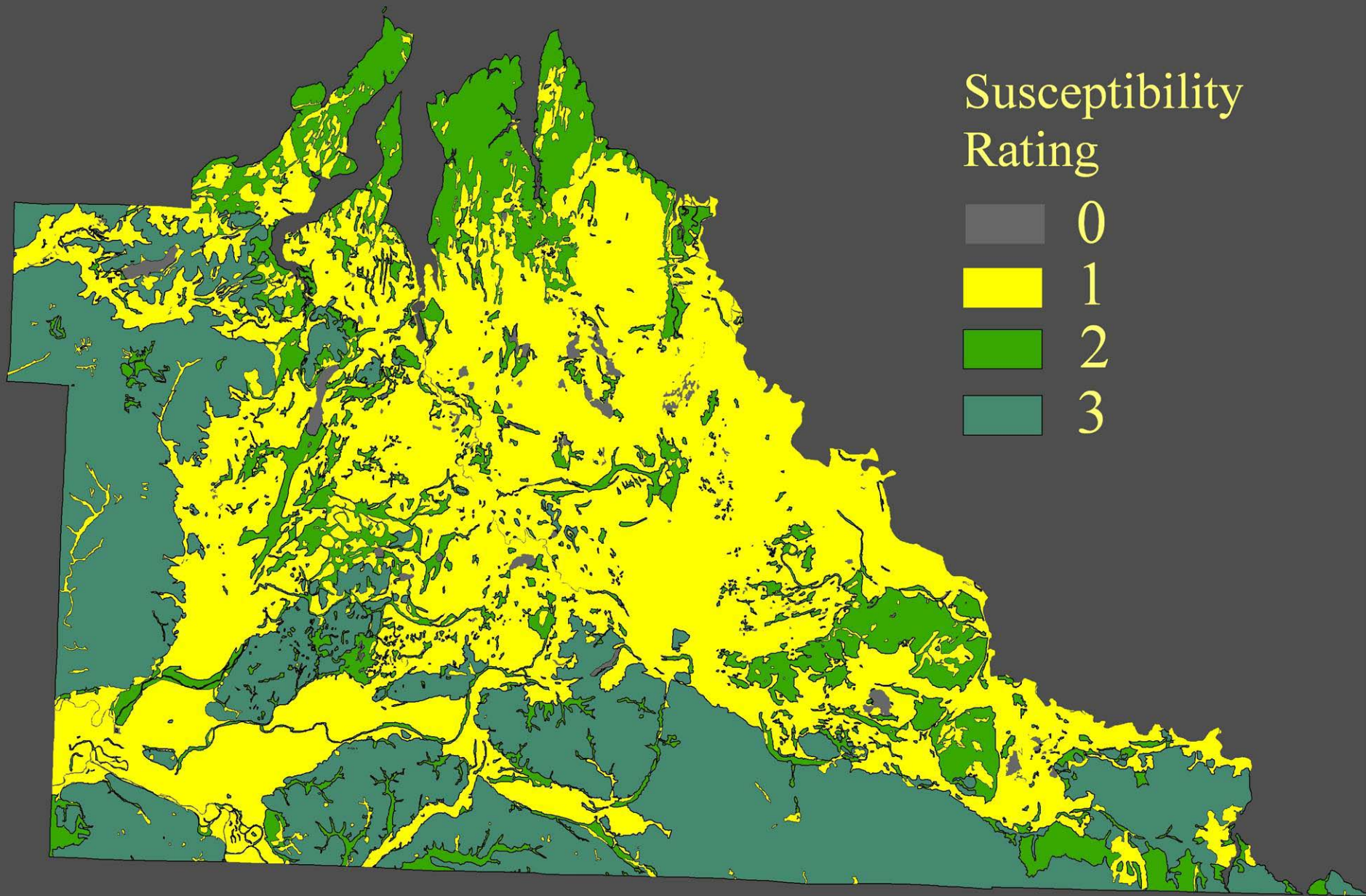
Steps to Protect Groundwater

- **Map** where groundwater resources are located.
- **Analyze** the susceptibility of the natural setting where groundwater occurs.
- **Inventory** existing potential sources of groundwater contamination
- **Classify** the relative vulnerability of groundwater to contamination events.

Steps to Protect Groundwater

- **Designate** areas that are most at risk to contamination events.
- **Protect** by minimizing activities and conditions that pose contamination risks.
- **Ensure** that contamination prevention plans and best management practices are followed.

Thurston County Critical Aquifer Recharge Areas, 1991 GIS Cover, WSDOT



A topographic map of a region in Washington state, featuring contour lines, roads, and geographical features like Black Lake and Sunnyside Lake. The map is overlaid with a grid of red and black lines.

Resources

- **Hydrogeologists**
- **USGS Quad Map**
- **DNR WA Geology**
- **NRCS Soil Survey**
- **Well Logs**
- **USGS Studies**
- **USGS Puget Sound RASA (Regional Aquifer System Analysis)**
- **Wellhead Protection Area Contaminant Inventories**



A good groundwater protection program...



- Identifies threats to groundwater,
- Identifies groundwater resources at risk
- Monitors to make sure a condition that could cause an unacceptable risk is not occurring.
- Educates and informs people so that they can do their best to protect groundwater
- Takes action when necessary!

Some GMA Critical Areas Concepts...

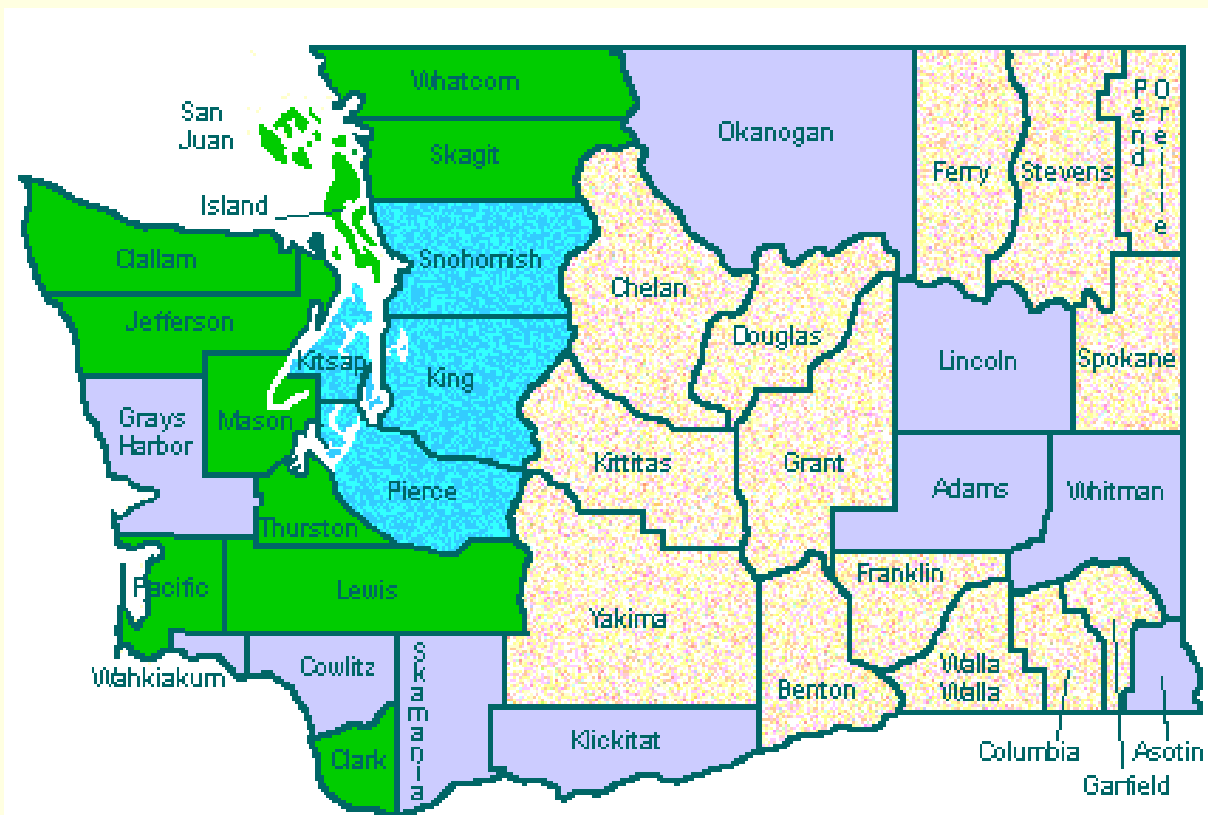
- Best Available Science
- Non-duplication of effort (studies and permits already required can be used for CARAs)
- Effort commensurate with local conditions – King County, Ferry County
- Updates – expect to improve
- Watershed Planning and CARAs

The GMA Hearings Board

- Rather than have GMA disputes proceed directly to superior court, the legislature created the boards.
- The boards “hear and determine” allegations that a city, county or state agency has not complied with the goals and requirements of the Growth Management Act (GMA), and related provisions of the Shoreline Management Act (SMA) and the State Environmental Policy Act (SEPA).

The GMA Hearings Board

- Central Puget Sound
- Western Washington
- Eastern Washington



GMA Hearings Board Challenges...

Agriculture

- If BMPs are relied upon ... some form of monitoring and enforcement must be included to ensure that the plans are actually implemented and followed. *ARD v. Shelton* 98-2-0005

Saltwater Intrusion

- Properly classify and designate vulnerable seawater intrusion areas as critical areas and adopt development regulations that protect aquifers used for potable water from further seawater degradation. *Olympic Environmental Council et. al. v. Jefferson County* – 01-2-0015

CARA Ordinances to look at...

- King County
- Thurston County
- Jefferson County
- Spokane County
- City of Renton
- City of Vancouver

Improvement, Help, and Answers to the Deep Questions of Life. Or at least to CARA questions!

- Continual dialog between cities and counties who administer CARAs, state agencies, the consulting and academic communities, citizens, environmental groups, the USGS, and EPA.
- Players who are aiding the dialog: All of the above, and especially OCD, IGWC, MRSC

The more we work together, the
happier we'll be...



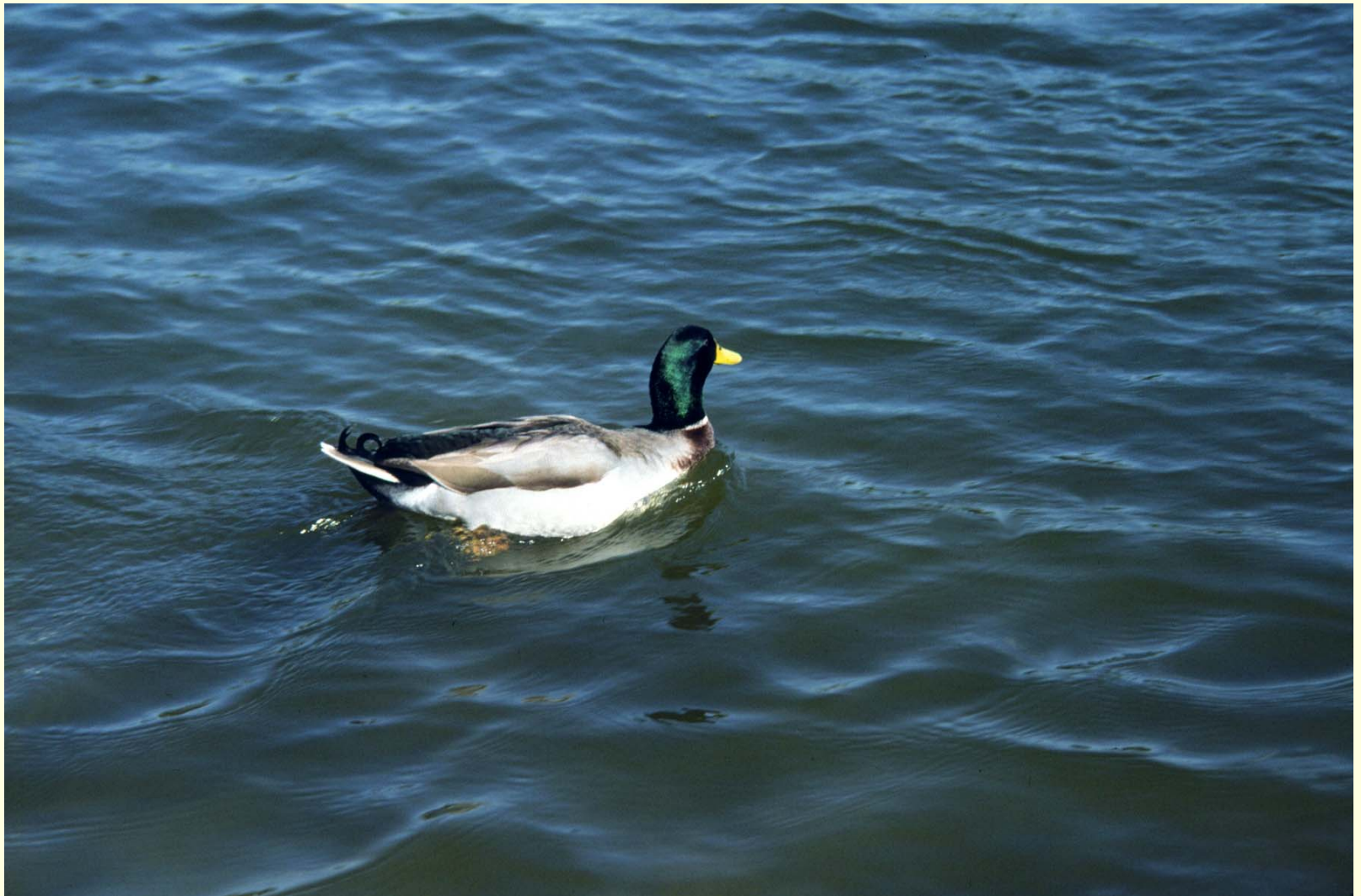
Sometimes, you just have to take a
stand...



Act wisely,



And things will turn out just ducky!



Resources

- Office of Community Development Growth Management Web Site
<http://www.oed.wa.gov/info/lgd/growth/>
- Growth Management Hearings Board
<http://www.gmhb.wa.gov/>
- The Municipal Research & Services Center of Washington <http://www.mrsc.org/>
- Department of Ecology on-line Guidance Document for the Establishment of Critical Aquifer Recharge Area Ordinances
<http://www.ecy.wa.gov/biblio/97030.html>
- Laurie Morgan lmor461@ecy.wa.gov or phone (360) 407-6483